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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/715,643	11/17/2000	Yoav Raz	EMS-00201	8061

26339 7590 07/27/2004
PATENT GROUP
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EXAMINER

KIM, JUNG W

ART UNIT PAPER NUMBER

2132

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	09/715,643	RAZ ET AL.	
	Examiner	Art Unit	
	Jung W Kim	2132	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-50 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/01/01, 12/08/00</u> | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. Claims 1-50 have been examined.

Drawings

2. New corrected drawings are required in this application because the drawings are informal. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for new drawings will be held in abeyance until a Notice of Allowance is submitted.

Claim Objections

3. Claims 36 and 39 are objected to because of the following informalities:
regarding claim 36, the sentence is not grammatical (see lines 10 and 11); regarding claim 39, on line 6, the phrase "at least part the at least one storage device" should read "at least part of the at least one storage device". Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-16, 18-42, and 44-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wells U.S. Patent No. 6,338,141 (hereinafter Wells) in view of Frisch Essential System Administration (hereinafter Frisch) and Kim "The Design and Implementation of Tripwire: A File System Integrity Checker" (hereinafter Kim). As per claim 1, Wells discloses a method of detecting computer viruses on a single, stand-alone computer system or on a networked machine using an antivirus unit (see Wells, abstract). Wells does not expressly disclose providing a disk space having at least a portion that is partitioned into separate segments, each segment being accessed by at least one of a plurality of hosts, wherein a first one of the segments is accessed using a different file system than a second one of the segments. However, this configuration is found in several operating systems. For example, Frisch teaches a UNIX operating system that enables a flexible partitioning capability wherein each partitioned segment

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is accessed using a different file system (see Frisch, pages 409-414 'From Disks to Filesystems', especially page 409, first paragraph in the section). It would be obvious to one of ordinary skill in the art at the time the invention was made for the method of detecting a virus to be actuated on a disk space having at least a portion that is partitioned into separate segments, each segment being accessed by at least one of a plurality of hosts, wherein a first one of the segments is accessed using a different file system than a second one of the segments. Motivation for such an implementation enables an administrator broader control to allow or restrict access to information on a disk by segmenting the disk on a partition level as taught by Frisch (see Frisch, page 394, 2nd and 3rd paragraphs).

7. Further, Wells does not expressly disclose scanning for a virus on a portion of the disk that includes a part of the first and second segments. However, means of selectively checking the integrity of separate filesystems on a disk is a feature of the UNIX tool Tripwire. Kim teaches how different filesystems on a disk can be checked by entering the paths of relevant filesystems as well as corresponding selection-masks, which classifies how to observe changes in the filesystem, in the Tripwire configuration file (see Kim, page 11, Figure 2 and related text). Furthermore, Kim teaches Tripwire as a function operating in a larger security methodology: the results of a Tripwire check can be used by a filter program (see Kim, page 12, 2nd paragraph, 'quiet option'); likewise, the invention disclosed by Wells teaches each function of the antivirus unit can be used independently (see Wells, col. 1, lines 48-61). The combination of Tripwire and the antivirus unit disclosed by Wells forms a methodology such that Tripwire implements a

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integrity check of selected portions of the disk and the invention of Wells processes the information from Tripwire to selectively scan for potentially infected files and handle detected viruses accordingly. It would be obvious to one of ordinary skill in the art at the time the invention was made to selectively scan separate filesystems on a disk space for viruses. Motivation for such an implementation enables the flexibility to secure any suspicious subset of data on a disk, even across partitioned boundaries. The aforementioned covers claim 1.

8. As per claim 2, Wells covers a method as outlined above in the claim 1 rejection under 35 U.S.C. 103(a). In addition, the first and second segments correspond to different physical portions of the disk space (see Frisch, page 410, Figure 9-3).

9. As per claim 3, Wells covers a method as outlined above in the claim 2 rejection under 35 U.S.C. 103(a). In addition, Frisch teaches an embodiment of the UNIX OS wherein the first and second segments overlap (see Frisch, pages 39-41, Links). It would be obvious to one of ordinary skill in the art at the time the invention was made for the first and second segments to overlap to enable information pertinent to multiple segments to be shared between the segments as taught by Frisch.

10. As per claim 4, Wells covers a method as outlined above in the claim 2 rejection under 35 U.S.C. 103(a). In addition, Frisch teaches an embodiment of the UNIX OS wherein the first and second segments do not overlap (see Frisch, page 395, Figure 9-

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1, disk 1). It would be obvious to one of ordinary skill in the art at the time the invention was made for the first and second segments to not overlap to organize segments into distinct logical partitions as taught by Frisch.

11. As per claim 5, Wells covers a method as outlined above in the claim 1 rejection under 35 U.S.C. 103(a). In addition, Frisch teaches an embodiment of the UNIX OS wherein the first and second segments correspond to logical entities (see Frisch, page 395, Figure 9-1, disk 1). It would be obvious to one of ordinary skill in the art at the time the invention was made for the first and second segment to correspond to logical entities since it enables a direct correlation between a physical partition and a logical partition as taught by Frisch.

12. As per claim 6, Wells covers a method as outlined above in the claim 5 rejection under 35 U.S.C. 103(a). In addition, Frisch teaches an embodiment of the UNIX OS wherein the first and second segments overlap (see Frisch, pages 39-41, Links). It would be obvious to one of ordinary skill in the art at the time the invention was made for the first and second segments to overlap to enable information pertinent to multiple segments to be shared between the segments as taught by Frisch.

13. As per claim 7, Wells covers a method as outlined above in the claim 5 rejection under 35 U.S.C. 103(a). In addition, Frisch teaches an embodiment of the UNIX OS wherein the first and second segments do not overlap (see Frisch, page 395, Figure 9-

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1, disk 1). It would be obvious to one of ordinary skill in the art at the time the invention was made for the first and second segments to not overlap to organize segments into distinct logical partitions as taught by Frisch.

14. As per claim 8, Wells covers a method as outlined above in the claim 1 rejection under 35 U.S.C. 103(a). In addition, the part of the disk space that is scanned by the antivirus unit corresponds to particular types of files stored in the disk space (see Wells, col. 9, lines 1-4).

15. As per claim 9, Wells covers a method as outlined above in the claim 1 rejection under 35 U.S.C. 103(a). In addition, Kim teaches identifying files that have been modified since a previous scan and using a filter program to generate an automated action in response to the identified files, and Wells teaches scanning selected files by an antivirus unit as an independent function within a larger collective antivirus methodology (see Kim, page 11, section 4.2, tw.config selection-mask combination: +m; page 12, 2nd paragraph; see Wells, col. 1, lines 54-60). It would be obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Kim to the method covered by Wells to ensure the integrity of a file has not been breached since a previous scan (see Kim, page 1, last line-page 2, first line; page 10, section 4.1.3).

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16. As per claim 10, Wells covers a method as outlined above in the claim 9 rejection under 35 U.S.C. 103(a). In addition, Kim teaches examining a date of last modification for each of the files; and determining which files have been modified since a previous scan using the date of last modification for each of the files (see Kim, page 11, section 4.2, tw.config selection-mask combination: +m). It would be obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Kim to the method covered by Wells to ensure the integrity of a file has not been breached since a previous scan (see Kim, page 1, last line-page 2, first line; page 10, section 4.1.3).

17. As per claim 11, Wells covers a method as outlined above in the claim 10 rejection under 35 U.S.C. 103(a). In addition, Wells and Kim teach scanning the file for viruses in response to a date of last modification indicating a file has been modified since a previous virus scan (see Wells, col. 1, lines 54-60; see Kim, page 12, 2nd paragraph). It would be obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Kim to the method covered by Wells to ensure the integrity of a file has not been breached since a previous scan (see Kim, page 1, last line-page 2, first line; page 10, section 4.1.3).

18. As per claim 12, Wells covers a method as outlined above in the claim 11 rejection under 35 U.S.C. 103(a). In addition, Wells and Kim teach comparing a current size of the file with a previous size of the file determined during the previous virus scan in response to date information indicating that a file has not been modified since a

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previous virus scan; and in response to the current size being different from the previous size, rescanning the file (see Kim, page 11, section 4.2, tw.config selection-mask combination: +ms; page 12, 2nd paragraph; see Wells, col. 1, lines 54-60). It would be obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Kim to the method covered by Wells to ensure the integrity of a file has not been breached since a previous scan (see Kim, page 1, last line-page 2, first line; page 10, section 4.1.3).

19. As per claim 13, Wells covers a method as outlined above in the claim 1 rejection under 35 U.S.C. 103(a). In addition, Kim teaches implementing at least part of Tripwire using stand-alone hardware (see Kim, page 12, section 4.3.1). It would be obvious to one of ordinary skill in the art at the time the invention was made to implement at least part of the antivirus unit using stand-alone hardware to ensure the inviolability of the integrity database used by Tripwire (see Kim, page 12, section 4.3.1, first paragraph in the section, 2nd sentence).

20. As per claim 14, Wells covers a method as outlined above in the claim 1 rejection under 35 U.S.C. 103(a). In addition, Frisch and Kim teach implementing at least part of the antivirus unit as a process running on at least one of the hosts (see Frisch, page 43, 'Processes'; see Kim, page 10, section 4.1.2, 'Scalability' and section 4.1.3, 'Configurability and flexibility'; see Wells, col. 3, lines 10-11). It would be obvious to one of ordinary skill in the art at the time the invention was made for a part of the antivirus

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unit be a process running on at least one of the hosts since any application run on a machine comprises at least one process on the machine: as defined by Frisch, a process is a single program running in its own virtual address space (see Frisch, page 43, last paragraph, first sentence).

21. As per claim 15, Wells covers a method as outlined above in the claim 1 rejection under 35 U.S.C. 103(a). In addition, Frisch teaches the useable areas of a disk space are partitioned into separate segments in any given partitioned disk (see Frisch, page 395, Figure 9-1, disk 1; page 410, Figure 9-3). It would be obvious to one of ordinary skill in the art at the time the invention was made for the useable areas of the disk space to be partitioned into separate segments to enable each disk partition to be usable to a user or application.

22. As per claim 16, Wells covers a method as outlined above in the claim 1 rejection under 35 U.S.C. 103(a). In addition, Wells and Kim teach the antivirus unit scans useable areas of the disk space (see Kim, page 11, Figure 2; see Wells, col. 1, lines 54-60). It would be obvious to one of ordinary skill in the art at the time the invention was made for the antivirus unit to scan useable areas of the disk space since these areas are workspaces having read/write privileges for users and applications and are prone to integrity attacks when a virus attains these privileges.

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23. As per claim 18, Wells covers a method as outlined above in the claim 1 rejection under 35 U.S.C. 103(a). In addition, Frisch teaches an embodiment of the UNIX OS wherein a particular segment assigned to a first host is inaccessible to other hosts (see Frisch, page 29, Table 2-3, 'no access'; page 30, 5th line 'Other Access' and Figure 2-1; pages 228-229 'Using Groups Effectively', especially page 228, 4th paragraph, second sentence). It would be obvious to one of ordinary skill in the art at the time the invention was made for a particular segment assigned to a first host to be inaccessible to other hosts for the purpose of enforcing non-use of those who do not require access to a segment (see Frisch, page 228, 4th paragraph, second sentence).

24. As per claim 19, Wells covers a method as outlined above in the claim 18 rejection under 35 U.S.C. 103(a). In addition, Frisch teaches an embodiment of the UNIX OS wherein all of the segments are at least readable by the antivirus unit (see Frisch, page 29, Table 2-3, 'read access only'; page 30, 3rd line 'Group access' and Figure 2-1; pages 228-229 'Using Groups Effectively', especially page 228, 3rd paragraph, first sentence and 4th paragraph, last sentence). It would be obvious to one of ordinary skill in the art at the time the invention was made for all of the segments to be readable by the antivirus unit to enable the antivirus unit to comprehensively check the integrity of the disk (see Frisch, page 228, 3rd paragraph, first sentence and 4th paragraph).

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25. As per claim 20, Wells covers a method as outlined above in the claim 1 rejection under 35 U.S.C. 103(a). In addition, Kim and Frisch teach that at least a portion of the antivirus unit is provided on at least some controllers for disks corresponding to the disk space (see Kim, page 11, Figure 2, first entry '/etc' and Section 4.2; see Frisch, pages 398-405, 'The Filesystem Configuration File', especially page 398, '/etc/fstab'). It would be obvious to one of ordinary skill in the art at the time the invention was made for a portion of the antivirus unit to be provided on at least some controllers for disks corresponding to the disk space to enable a comprehensive integrity check methodology.

26. As per claim 21, Wells covers a method as outlined above in the claim 20 rejection under 35 U.S.C. 103(a). In addition, Kim teaches Tripwire is provided with file structure information for files stored in the disk space (see Kim, page 11, section 4.2, tw.config selection-mask +in). It would be obvious to one of ordinary skill in the art at the time the invention was made for the antivirus unit to be provided with file structure information for files stored in the disk space to enable the unit to check for integrity inconsistencies in the file structure as taught by Kim.

27. As per claims 22-25, Wells covers a method as outlined above in the claim 1-16 and 18-21 rejections under 35 U.S.C. 103(a). In addition, Kim teaches a first scan at a first time and a second scan at a second time after the first time, wherein the results of the first scan are taken into consideration in the performing of the second scan as

outlined in the invention covered in the claim 1-16 and 18-21 rejections (see Kim, page 14, section 4.5). It would be obvious to one of ordinary skill in the art at the time the invention was made for there to be a first virus scan at a first time and a second virus scan at a second time after the first time and dependent on the results of the first scan since the scans are automated on a periodic basis and the integrity of the segments must be accounted for consistent with preceding scans starting with the inception of the checks to ensure integrity is maintained over the course of multiple periods (see Kim, page 14, section 4.5, 1st paragraph of the section, 3rd sentence). The aforementioned cover claims 22-25.

28. As per claims 26-35, they are apparatus claims corresponding to claims 1-12 and they do not teach or define above the information claimed in claims 1-12. Therefore, claims 26-35 are rejected as being unpatentable over Wells in view of Frisch and Kim for the same reasons set forth in the rejections of claims 1-12.

29. As per claims 36-38, they are apparatus claims corresponding to claims 22-25 and they do not teach or define above the information claimed in claims 22-25. Therefore, claims 36-38 are rejected as being unpatentable over Wells in view of Frisch and Kim for the same reasons set forth in the rejections of claims 22-25.

30. As per claims 39, 42 and 44-46, they are apparatus claims corresponding to claims 1, 13, 14 and 20, and they do not teach or define above the information claimed

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in claims 1, 13, 14 and 20. Therefore, claims 39, 42 and 44-46 are rejected as being unpatentable over Wells in view of Frisch and Kim for the same reasons set forth in the rejections of claims 1, 13, 14 and 20.

31. As per claim 40, Wells covers an antivirus unit as outlined above in the claim 39 rejection under 35 U.S.C. 103(a). In addition, Kim teaches an embodiment of Tripwire wherein the means for coupling includes means for coupling to only one storage device (see Kim, pages 14-15, section 5). It would be obvious to one of ordinary skill in the art at the time the invention was made for the means for coupling to include means for coupling to only one storage device to provide a personal integrity checking means (see Kim, page 14, section 5, 1st paragraph in the section).

32. As per claim 41, Wells covers an antivirus unit as outlined above in the claim 39 rejection under 35 U.S.C. 103(a). In addition, Kim teaches an embodiment of Tripwire wherein the means for coupling includes means for coupling to more than one storage device (see Kim, page 10, section 4.1.2, 'Scalability'). It would be obvious to one of ordinary skill in the art at the time the invention was made for the means for coupling to include means for coupling to more than one storage device to share one configuration of the integrity checker across a multitude of storage devices for a consistent integrity check methodology across the storage network (see Kim, page 10, section 4.1.2, 1st and 2nd paragraph in the section).

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33. As per claims 47-50, they are apparatus claims corresponding to claims 13, 20, 22 and 23, and they do not teach or define above the information claimed in claims 13, 20, 22 and 23. Therefore, claims 47-50 are rejected as being unpatentable over Wells in view of Frisch and Kim for the same reasons set forth in the rejections of claims 13, 20, 22 and 23.

34. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wells in view of Frisch and Kim, and further in view of Stang "Comparison: Products to Detect Changes to Programs" (hereinafter Stang). As per claim 17, Wells covers a method as outlined above in the claim 1 rejection under 35 U.S.C. 103(a). Wells does not specify the antivirus unit scanning a portion of the disk space independently of any file structures corresponding to the disk space. Stang discloses several integrity checkers that scans disk space independently of any file structures corresponding to the disk space (see Stang, page 14, 'Checkup' and 'The Detective'). It would be obvious to one of ordinary skill in the art at the time the invention was made for the antivirus unit to scan independent of any file structures. Motivation for such a combination simplifies the scanning procedure by scanning everything on the disk as taught by Stang.

35. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wells in view of Frisch and Kim, and further in view of Tso et al. U.S. Patent No. 6,088,803 (hereinafter Tso). As per claim 43, Wells covers a method as outlined above in the claim 42 rejection under 35 U.S.C. 103(a). Wells does not specify an embodiment

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wherein the antivirus unit is interposed between the at least one storage device and the at least one host. Tso discloses an antivirus accelerator for computer networks wherein an antivirus unit is interposed between a storage device and a host, wherein files requested by the host is first scanned by the antivirus unit then submitted to the host if no virus is detected (see Tso, figure 1 and related text). It would be obvious to one of ordinary skill in the art at the time the invention was made to apply the apparatus of Tso to the apparatus of Wells. Motivation for such a combination safeguards information being transferred from a storage unit to a host as taught by Tso (see Tso, col. 1, lines 48-55).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chi U.S. Patent No. 6,006,329.

Waldin et al. U.S. Patent No. 6,094,731.

Kleimola "Experimenting with countermeasures Appendix C: Tripwire".

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jung W Kim whose telephone number is (703) 305-8289. The examiner can normally be reached on M-F 9:00-6:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on (703) 305-1830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jung W Kim
Examiner
Art Unit 2132

Jk
July 14, 2004

Justin T. Darrow
JUSTIN T. DARROW
PRIMARY EXAMINER